

BIRCH, STEWART, KOLASCH & BIRCH, LLP

INTELLECTUAL PROPERTY LAW

8110 GATEHOUSE ROAD

SUITE 500 EAST

FALLS CHURCH, VA 22042-1210

USA

(703) 205-8000

FAX (703) 205-8050

(703) 698-8590 (G IV)

e-mail: mailroom@bskb.com

web: http://www.bskb.com

**CALIFORNIA OFFICE
COSTA MESA, CALIFORNIA**

THOMAS S. AUCHTERLOFF
JAMES T. ELLER, JR.
SCOTT L. LOWE
MARK J. NUELLE, PH.D.
D. RICHARD ANDERSON
PAUL C. LEWIS
MARK W. MILSTEAD*
JOHN CAMPA*
RICHARD J. GALLAGHER

REG. PATENT AGENTS
FREDERICK R. HANDREN
MARYANNE ARMSTRONG, PH.D.
NAKI HATSUMI
MIKE S. RYU
CRAIG A. McROBBIE
GARTH M. DAHLEN, PH.D.
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KRISTI L. RUPERT, PH.D.

ELLIOT C. BIRCH
MOND C. STEWART
SEPH A. KOLASCH
JAMES M. SLATTERY
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JOHN W. BAILEY
JOHN A. CASTELLANO, III
GARY D. YACURA

OF COUNSEL:
HERBERT M. BIRCH (1905-1996)
ELLIOT A. GOLDBERG*
WILLIAM L. GATES*
EDWARD H. VALANCE
RUPERT J. BRADY (RET.)*
F. PRINCE BUTLER
FRED S. WHISENHUNT

*ADMITTED TO A BAR OTHER THAN VA

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BOX PATENT APPLICATION

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

As authorized by the inventor(s), transmitted herewith for filing is a patent application applied for on behalf of the inventor(s) according to the provisions of 37 C.F.R. § 1.41(c).

Inventor(s): Il Gun KWON and Ji Yeon HWANG

For: METHOD AND APPARATUS FOR ASSISTING A USER TO MAKE
A CONNECTION BETWEEN A MAIN DEVICE AND A
PERIPHERAL DEVICE

Enclosed are:

- ☒ A specification consisting of TWENTY-EIGHT (28) pages
- ☒ SEVEN (7) sheet(s) of formal drawings
- ☒ Certified copy of 1999/55490
- ☒ Executed Declaration in accordance with 37 C.F.R. § 1.64 will follow
- ☐ A statement to establish small entity status under 37 C.F.R. § 1.9 and 37 C.F.R. § 1.27
- ☐ Preliminary Amendment

- ☒ Information Sheet
- ☐ Information Disclosure Statement, PTO-1449 and reference(s)
- ☐ Other: _____

The filing fee has been calculated as shown below:

		LARGE ENTITY	SMALL ENTITY
BASIC FEE		\$690.00	\$345.00
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TOTAL CLAIMS	52-20=	32	x 18 = \$576.00
INDEPENDENT CLAIMS	14-3=	11	x 78 = \$858.00
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIMS PRESENTED			+ \$260.00
		TOTAL	\$2124.00
			\$0.00

- ☒ The application transmitted herewith is filed in accordance with 37 C.F.R. § 1.41(c). The undersigned has been authorized by the inventor(s) to file the present application. The original duly executed declaration together with the surcharge will be forwarded in due course.
- ☒ A check in the amount of \$2124.00 to cover the filing fee is enclosed.
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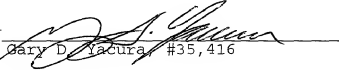
BIRCH, STEWART, KOLASCH & BIRCH, LLP or Customer No. 2292
P.O. Box 747
Falls Church, VA 22040-0747
Telephone: (703) 205-8000

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Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By


Gary D. Yacura, #35,416

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000

GDY:jcp
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Attachments

(Rev. 04/19/2000)

METHOD AND APPARATUS FOR ASSISTING A USER TO MAKE A CONNECTION BETWEEN A MAIN DEVICE AND A PERIPHERAL DEVICE

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a method and apparatus for guiding connections between a main device and external peripheral devices.

Background of the Related Art

Connections between a display device and peripheral devices in the related art have mostly been between a TV receiver and a Video Cassette Recorder (VCR). In such cases, the connection between the TV receiver and the VCR is through a RF output terminal on the VCR and a RF input terminal on the TV receiver, or through a composite video and audio L/R using an external input terminal, i.e. a RCA type jack. Although the connection seems simple, to actually connect or reconnect a TV receiver and a VCR, users frequently refer to a manual. Thus, if the manual is lost, a user may experience difficulty in making even a simple connection.

Also, connections to a TV receiver may become more complicated as there are other peripheral devices for connecting to the TV receiver such as a cable box, a Digital Versatile Disk

(DVD), a digital terrestrial broadcast receiver, a satellite set top box, and PC. Moreover, due to a recent increase in the functions of a TV, even more peripheral devices may need to be connected. Thus, if the number of peripheral devices keeps increasing, users will experience more difficulty in connecting a TV receiver to peripheral devices and in order to explain such connections, a user's manual will also become more complicated.

As an alternative to making connections by referring to a user's manual, an initial setup menu in the related art of a TV provides a questionnaire regarding what type of peripheral device needs to be connected and displays the necessary circuit to a user based upon the answers to the questionnaire. Thus, a user can connect a peripheral device to the TV receiver according to the circuit shown on the TV screen. However, the questionnaires are often complicated and if a user wishes to see a connection to a peripheral device other than the one selected, the user can only see the circuit after completing the questionnaire for the selected peripheral device. Thus, a user cannot see the overall connection or wiring at a glance. Particularly, when a user merely wishes to understand how a TV receiver and peripheral devices are connected, the method in the related art is complicated and inconvenient to the user.

SUMMARY OF THE INVENTION

In the method and apparatus for assisting a user to make a connection between a main device and peripheral device, an illustration visually demonstrating how to connect a peripheral device or combination of peripheral devices to the main device is displayed on the display screen. More specifically, in one embodiment, the illustration shows at least one connecting portion of the main device, the connecting portion of at least one peripheral device, and the connection

between the connecting portion of the main device and the connecting portion of the peripheral device or devices. In an alternative embodiment, more than one or all of the connecting portions of the main device are shown in the illustration. In addition to or instead of the alternative embodiment, the connecting portion of a plurality of a peripheral devices are shown in the illustration.

In another embodiment of the present invention, the illustration shows at least one connecting portion of the main device, and the connections to make to the connecting portion of the main device when connecting a particular peripheral device. Again, more than one or all of the connecting portions of the main device may be illustrated.

With respect to both the first and second embodiments, and the alternatives thereof, a menu screen is preferably displayed. The menu screen provides as menu items, the peripheral devices or combinations of peripheral devices which can be connected to the main device. A user, through an input device, selects one of the menu items, and based on the menu item selected, the illustration is changed to show the connections between the main device and selected peripheral device or devices.

The main device may be any device to which a plurality of peripheral devices can be connected, such as a TV receiver and a personal computer. The peripheral devices are the peripheral devices associated with the main device. In the case of a TV receiver, the peripheral devices include a VCR, a DVD player, an antenna, a cable box, a digital television receiver, etc.

The method and apparatus for assisting the user to make a connection between the main device and a peripheral device according to the present invention provide the advantages of a user-friendly guide for making such connections without having to resort to a user's manual.

Thus, the present invention solves the problems and disadvantages discussed above with respect to the related art.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in detail with reference to the following drawings in which like reference numerals refer to like elements wherein:

FIG. 1 is a block diagram of a TV receiver in accordance with a preferred embodiment of the present invention;

FIG. 2 is a process for selecting an EZ hook up menu in accordance with a preferred embodiment of the present invention;

FIG. 3 is a wiring diagram showing connections between a TV receiver and peripheral devices when a cursor is positioned at Ant/Cable item in an EZ hook up menu in accordance with a preferred embodiment of the present invention;

FIG. 4 is a wiring diagram showing connections between a TV receiver and peripheral devices when a cursor is positioned at an Ant/Cable and VCR item in an EZ hook up items in accordance with a preferred embodiment of the present invention;

FIG. 5 is a wiring diagram showing connections between a TV receiver and peripheral devices when a cursor is positioned at a Cable Box and VCR item in an EZ hook up menu in accordance with a preferred embodiment of the present invention;

FIG. 6 is a wiring diagram showing connections between a TV receiver and peripheral devices when a cursor is positioned at a DVD/Hi Res item in an EZ hook up menu in accordance with a preferred embodiment of the present invention; and

FIG. 7 is a wiring diagram showing connections between a TV receiver and peripheral

devices when a cursor is positioned at a DVD/Hi Res item in an EZ hook up menu in accordance with another embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. FIG. 1 is a block diagram of a TV receiver in accordance with a preferred embodiment of the present invention.

Referring to FIG. 1, a microcomputer 103 receives a signal from a selection device on a TV receiver through a key receiver 101 or receives signals from an external selection device through an IR receiver 102. Here, the selection device on a TV receiver may be a keypad and the external selection device may be a remote control. An IR/key decoder in the microcomputer 103 interprets codes of the received signals and outputs the interpreted signal to a digital processor 109 through a protocol line.

The digital processor 109 includes a CPU 112 which controls the entire system and executes the built-in programs, according to the signal codes received through the protocol line.

As the TV receiver may be connected to a variety of devices, such as a National Television Standards Committee (NTSC) antenna, an Advanced Television Systems Committee (STSC) antenna, a first VCR input terminal J1, a second VCR input terminal J2, a third VCR input terminal J3, a High Definition Distribute Sample Scrambler (HD-DSS) input terminal J4, a DVD input terminal J5, a Video Graphics Array (VGA) input terminal, different selection and operation of peripheral devices is possible if connected.

Thus, keys for selecting the peripheral devices are assigned to a selection device such as

the remote control. The assignment may be one key for one peripheral device or one key for a plurality of peripheral devices. If one key is assigned to a plurality of peripheral devices, a peripheral device can be selected by repeatedly pressing a key. Accordingly, if a user presses a key, a corresponding key code value would be sent to the microcomputer 103 through the key receiver 101 or the IR receiver 102. At this time, if a selected peripheral device is connected to the TV receiver through a connection line such as a cable, a signal from the selected peripheral device is sent to the TV receiver through the connection line for processing and display.

For example, if a user selects an antenna by pressing a key, either a signal from the NTSC antenna or the ATSC antenna would be selected. If the user selects an antenna while an analog video signal received through the NTSC antenna is being displayed, a digital video signal received through the ATSC antenna would begin to be displayed on the TV screen. Likewise, if the user selects an antenna while a digital video signal received through the ATSC antenna is being displayed, an analog video signal received through the NTSC antenna would begin to be displayed.

Also, when the user selects a video, one of the composite video signals from the first VCR input terminal J1, the second VCR input terminal J2, or the third VCR input terminal J3 is selected. If video is selected while a video signal received through the first VCR input terminal J1 is being displayed, the video signal received through the second VCR input terminal J2 would begin to be displayed on the TV screen. If the video is selected again, the video signal received through the third VCR input terminal J3 would begin to be displayed on the TV screen. If a user continues selecting the video, the video signals received through the first VCR input terminal J1, the second VCR input terminal J2, and the third VCR input terminal J3 would begin

to be displayed on the TV screen, in sequence.

Similarly, if the user selects DVD, a DVD (YCbCr) video signal received through the DVD input terminal J5 would begin to be displayed on the TV screen. If a different peripheral device is selected by a user, a video signal of the corresponding peripheral device would begin to be displayed on the screen. The paths of signals selected by a peripheral device selection will next be discussed.

One of composite video signals received through the first VCR input terminal J1, the second VCR input terminal J2, or the third VCR input terminal J3 is selected through an A/V switch 105. The operation of A/V switch 105 is controlled by user input received from, e.g., source selection key input devices 101 and 102, and processed by the microcomputer 103. The composite video signal selected by the A/V switch 105 is sent to a Digital Comb Filter (DCF) 106 and undergoes a luminance/color (Y/C) separation. Thereafter, the separated Y/C signals are again separated into luminance information Y and color information U/V through a NTSC decoder 107, and sent to a Video Chroma Processor 108 (VCP). A video signal received by a tuner 104 through the NTSC antenna would also be sent to the VCP 108 in a same process, i.e. through the A/V switch 105, the DCF 106 and the NTSC decoder 107.

The VCP 108 receives the NTSC, HD-DSS, VGA, and DVD signals, selects one of the received signals according to selection by a user, and sends an analog YUV signal to an A/D converting unit 110 in the digital processor 109 through an SEL_out terminal. If there are more peripheral devices that can be connected to the TV receiver, the signals that can be received by the VCP 108 would increase. The A/D converting unit 110 converts the analog YUV signal into a digital YUV signal, and sends the digital YUV signal to a Video Decoding Processor (VDP)

115.

In contrast to the video signals received through the NTSC antenna or input terminals J1~J5, a digital video signal received through the ATSC antenna is sent to a transport demultiplexing and decoding unit in the CPU 112 via a Versatile Sideband (VSB) demodulator 111. The VSB demodulator 111 demodulates the digital video signal, and the CPU 112 demultiplexes the digital video signal to separate out a video bit stream, decodes the separated video bit stream, and outputs the decoded video bit stream to the VDP 115. Here, a DRAM 113 is used during the video decoding, generally for writing and reading a bitstream, reading data required for motion compensation, writing decoded data, and reading data to be displayed. Also, a flash ROM 114 stores a program to be executed by the CPU 112, characters for OSD, and graphic fonts.

Based on user input, the VDP 115 combines a video signal from the A/D converting unit 110 or from the ATSC antenna with an OSD menu generated by a bit map stored in the flash ROM 114, converts the combined signal into a YUV signal, and sends the YUV signal to the VCP 108. The VCP 108 converts the YUV signal into a RGB signal and displays the RGB signal on a display 116 such as the TV receiver screen. Here, the OSD processed image may be displayed in the form of characters or graphics, may be displayed over the video signal used as a background image, or may be displayed alone.

The Easy (EZ) hook up menu screen according to the present invention for showing how to connect a TV receiver to external peripheral devices is displayed on the TV receiver screen as an OSD processed image.

Particularly, the EZ hook up menu screen showing connections between a TV receiver

jack panel and an external peripheral device jack panel may be displayed through a sequential selection process on the OSD menu screen. Alternatively, the EZ hook up menu screen may be displayed directly without an intermediary process by assigning a key on a selection device, with at least one key, as a display of the EZ hook up menu if selected.

In the present invention, the selection device may be a remote control, or a panel selection device attached to a display device. Alternatively, the selection device may be a keyboard or a mouse connected to a display device by cable or radio. In the preferred embodiment, a remote control, which controls a cursor on the screen, is used as the selection device and the cursor may be moved between displayed menus on the screen to select a desired menu.

FIG. 2 shows an example process for selecting an EZ hook up menu through a selection process on an OSD menu screen in accordance with a preferred embodiment of the present invention. Namely, when a user selects to display a menu through a remote control, a main menu 10 is displayed. If the user uses a directional key or a jog shuttle key on the remote control to select an item by moving a cursor up and down the main menu, a submenu 12 of a selected item is displayed.

FIG. 2 shows one example of a submenu 12 displayed when a set up item is selected from the main menu 10. A submenu 12 may be displayed by pressing a selection key when the cursor is positioned at a desired menu item. Alternatively, a submenu 12 may automatically be displayed when a cursor is positioned at a menu item. For example, a submenu corresponding to a highlighted menu item would be displayed even if a selection key is not pressed. Moreover, when a submenu item such as the EZ program is selected in the same manner as a main menu

item, a lower level submenu 14 is displayed as shown in FIG. 2. Here, the display position and appearance of the main menu 10, the submenus 12 and 14, and each item may be represented in a different manner according to needs of the display device and preference of the designer.

For purposes of the preceding and foregoing explanation, a TV receiver will be assumed as the main device. Accordingly, if the user selects the EZ hook up item from the submenu items shown in FIG. 2, an EZ hook up OSD screen stored in the Flash ROM 114 is displayed in this manner discussed above. Fig. 3 illustrates the this screen display except for the connection between the TV jack panel 22 and the antenna and cable TV wall jack. The EZ hook up OSD screen may also be directly displayed by pressing a pre-assigned key on a remote control.

Referring to FIG. 3, the names of peripheral devices that can be connected to the TV receiver appear as a menu 20 of items which can be selected by moving the cursor. Fig. 3 also shows the TV jack panel 22, and jack panels 24, 26, 28, 30 and 32 of the named peripheral devices. Particularly, the menu items 20 may be an array of icons arranged in the left portion of the screen, where each icon represents one or a combination of peripheral devices.

The icon representations shown in FIG. 3 are one example and may differ in both position and appearance depending upon the needs of the main device and preference of the designer. The combination of peripheral devices represented by the menu items may also change as the peripheral devices that can be connected to main device, e.g. the TV receiver, increases or decreases. Also, icons other than shown in the EZ hook up menu screen of Fig. 3 may be displayed depending upon the needs of the main device and the preference of the designer. For example, an icon which allows movement between the current and previous screen and/or an icon which will display the main menu can be displayed as shown at the bottom of FIG. 3.

Referring back to FIG. 3, antennas, wall jacks, the TV rear jack panel 22 of an actual TV receiver and jack panels 24, 26, 28, 30 and 32 of peripheral device are arranged in a right portion of the screen. Namely, the entire or a portion of the input terminal plate on the rear of the TV receiver may be displayed by the OSD process. The input terminal plate would include different input jacks that can be used to connect to the TV receiver. However, for TV receivers, the input jacks may be located on the side and/or front surface other than the rear surface. In such case, one or all surfaces of the TV receiver may be displayed. For example, the surface including input jacks required for a connection may be displayed as necessary.

Similarly, depending upon the designer, all or less than all terminal plates of peripheral devices that can be connected to the TV receiver may initially be displayed. If less than all terminal plates of peripheral devices are displayed, the plate corresponding to a peripheral device icon selected from the EZ hook up menu items would be displayed together with the connection lines to the TV receiver jack panel. For example, if the cursor is positioned at the VGA icon or the VGA icon is selected from the EZ hook up menu selection items, the VGA terminal plate would be displayed simultaneously with a wiring diagram between the TV receiver and the VGA.

Furthermore, although the EZ hook up menu 20 is displayed in the left portion of the screen with the terminal plates, the menu 20 may be displayed at a different position such as the right portion of the screen. Alternatively, the EZ hook up menu 20 may be displayed initially without the terminal plates. In such case, the terminal plates showing a wiring diagram between the TV receiver and peripheral devices would be displayed on a different OSD screen when an icon or menu item representing one or a combination of peripheral devices is selected.

The operations of the present invention will next be explained with reference to FIGS.

3 ~ 6.

For purposes of explanation, the illustrated embodiment of the TV receiver displays the EZ hook up menu 20 in a left portion of the TV screen, where the menu items are combinations of names of peripheral devices that can be connected to the TV receiver. Also, all TV receiver terminal plates and terminal plates of the peripheral devices that can be connected to the TV receiver are displayed in the right portion of the TV screen. Furthermore, a user may move the cursor up and down the EZ hook up menu 20 using a direction key on a remote control to display on the right portion of the screen, a wiring diagram connection between the jack panel 22 of the TV receiver and the jack panel(s) 24, 26, 28, 30 and 32 of peripheral device(s) corresponding to an icon designated by the cursor.

FIG. 3 is a wiring diagram between the TV receiver and the peripheral devices displayed when the cursor is positioned at an Ant/Cable icon or the Ant/Cable item is selected from the EZ hook up menu 20. Namely, when a menu item of the menu 20 is selected, another OSD showing the wiring between the selected peripheral device or devices and the TV receiver is displayed overlaying or superimposed on the OSD of the TV jack panel 22 and the jack panels 24, 26, 28, 30 and 32 of the peripheral devices. Alternately, the OSD of the TV jack panel 22 and the jack panels 24, 26, 28, 30 and 32 of the peripheral devices could be replaced with a new OSD that shows the TV jack panel 22, the jack panels 24, 26, 28, 30 and 32 of the peripheral devices, and the wiring between the selected peripheral device or devices and the TV receiver.

The wiring diagram of Fig. 3 shows how to connect lines or cables for receiving air signals and cable signals coming through an antenna and the wall jack. Particularly, an input terminal of a 2 way signal splitter is connected to the antenna, one output terminal of the 2 way

signal splitter is connected to an ANTENNA CABLE 2 jack, and the other output terminal of the 2 way signal splitter is connected with a DTV-RF ANT INPUT jack. Also, a second input terminal of a 2 way signal splitter is connected to the wall jack and one output terminal of the 2 way signal splitter is connected to an ANTENNA CABLE 1 jack.

Although there can be a variety of ways to connect an antenna and cable TV to a TV receiver, the present invention shows the most recommendable connection of the ANT/Cable connections in the EZ hook up OSD of Fig. 3. Accordingly, an air RF TV signal received through the antenna is input to the ANTENNA CABLE 2 jack and the DTV ANT INPUT jack simultaneously through the 2 way single splitter. Likewise, the cable signal received through the wall jack is provided to the ANTENNA CABLE 1 jack through the 2 way single splitter.

FIG. 4 is a wiring diagram between the TV receiver and the peripheral devices displayed when the cursor is positioned at or selects Ant/Cable VCR icon from the EZ hook up menu items.

In such case, an input terminal of a 2 way signal splitter is connected to the antenna, one output terminal of the 2 way signal splitter is connected to the ANTENNA CABLE 2 jack, and the other output terminal of the 2 way signal splitter is connected to the DTV-RF ANT INPUT jack. A LOOP OUT jack is connected to an IN jack of the VCR and the ANTENNA CABLE 1 jack is connected to an OUT jack of the VCR. Also, VIDEO 1 V, L, R jacks are respectively connected to V, L, R jacks of the VCR.

Accordingly, an air RF TV signal through the antenna is input to the ANTENNA CABLE 2 jack and to the DTV RF ANT INPUT jack through the 2 way single splitter. The RF signal through the ANTENNA CABLE 2 jack is input to the IN jack of the VCR directly through the LOOP OUT jack, the signal from the OUT jack of the VCR is input to the ANTENNA CABLE

1 jack, and a base band composite of the VCR are provided to the VIDEO 1 V, L, R jacks.

FIG. 5 is a wiring diagram between the TV receiver and the peripheral devices displayed when the cursor is positioned at or selects Cable Box VCR icon from the EZ hook up menu 20. In such a case, an input terminal of a 2 way signal splitter is connected to the antenna and one output terminal of the 2 way signal splitter is connected to the DTV-RF ANT INPUT jack. An input terminal of a second 2 way signal splitter is connected to the wall jack and one output terminal of the 2 way signal splitter is connected to the ANTENNA CABLE 2 jack. A LOOP OUT jack is connected to an IN jack of the Cable TV Box, an OUT jack of the Cable TV Box is connected to an IN jack of the VCR, and an OUT jack on the VCR is connected to the ANTENNA CABLE 1 jack on the TV receiver. Also, the VIDEO 1 V, L, R jacks are respectively connected to the V, L, R jacks on the VCR, and an IN jack on an S-VIDEO is connected to a S-VIDEO jack on the VCR.

Accordingly, a cable signal received through the wall jack is input to the ANTENNA CABLE 2 jack through the 2 way single splitter, and the signal provided to the ANTENNA CABLE 2 jack is provided to an IN jack of the Cable TV Box through the LOOP OUT jack. The signal input to the IN jack of the Cable TV Box is provided to the IN jack on the VCR, and provided to the ANTENNA CABLE 1 jack through the OUT jack on the VCR. The base band composite of the VCR are also provided to the VIDEO 1 V, L and R jacks the same as shown in FIG. 4.

FIG. 6 is a wiring diagram showing connections between a TV receiver and peripheral devices when a cursor is positioned at or selects the DVD/Hi Res icon from EZ hook up menu 20 in accordance with a preferred embodiment of the present invention.

The wiring diagram illustrated by FIGS. 3 ~ 6 are examples, and the present invention is not limited to FIGS. 3 ~ 6. Instead the wiring diagrams will differ with the TV receiver and the best wiring configuration subjectively considered by the designer. For example, the illustrations on the display screen do not need to show the terminal plates of the peripheral devices. Fig. 7 illustrates a wiring diagram showing how to connect a DVD/Hi Res item to the TV receiver without illustrating the terminal plates of peripheral devices; particularly, the DVD/Hi Res item. Also, the present invention may implement an animation effect in which the lines connecting the main device and peripheral device(s) may move or flash, or the lines or plugs at the ends of lines may be colored for enhanced visual effect.

Also, although the display device in the examples was a TV receiver, the main device may be any device that connects with external peripheral devices. For example, the main device may be an analog TV receiver, a digital TV receiver, a set top box, a PC, etc. For a main device such as a PC, the peripheral devices could include a TV receiver, a disk drive, a mouse, speakers, a printer, etc., and with selection devices such as a mouse, the terminal plates of peripheral devices displayed on the PC screen may each act as an icon such that a wire diagram may be displayed by selecting one or more of the terminal plate icons using the input device. Finally, the present invention can represent in the EZ hook up OSD or graphic, a G-link output from the analog program guide gemstar board, and the remote control sensor fitting method for a VCR and Cable Box.

By displaying an EZ hook up menu having names of the peripheral devices that can be connected to a display device and by displaying a wiring diagram connecting the display device and designated peripheral device(s) in an OSD when a user selects peripheral device(s) through

the EZ hook up menu, the present device and method for displaying a connection guide between two devices allows a user to easily understand how to connect between the display device and the peripheral devices. Thus, a connection method between a display device and other peripheral device(s) can quickly be shown when a user selects a peripheral device through the EZ hook up menu. Accordingly, the present invention is a more effective instructional tool for display devices, such as a digital TV receiver, which can be connected to numerous peripheral devices.

The foregoing embodiments are merely exemplary and are not to be construed as limiting the present invention. The present teachings can be readily applied to other types of apparatuses.

The description of the present invention is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art.

What is Claimed is:

1. A method of assisting a user to make a connection between a main device and a peripheral device, comprising:

displaying a guide illustration on a display screen in response to user input, the illustration showing how to connect the main device and at least one peripheral device.

2. The method of claim 1, wherein the main device is one of a television receiver and a personal computer.

3. The method of claim 1, wherein the guide illustration shows at least one terminal plate of the main device, at least one terminal plate of the peripheral device and a connection between the terminal plate of the main device and the terminal plate of the peripheral device.

4. The method of claim 1, wherein the guide illustration shows at least one terminal plate of the main device, the terminal plate of more than one peripheral device, and a connection between the terminal plate of the main device and the terminal plate of at least one peripheral device.

5. The method of claim 1, wherein the guide illustration shows each terminal plate of the main device, the terminal plate of more than one peripheral device, and a connection between one of the terminal plates of the main device and the terminal plate of at least one peripheral device.

6. A method of assisting a user to make a connection between a main device and a peripheral device, comprising:

displaying an illustration on a display screen in response to user input, the illustration showing at least one connecting portion of a main device, a connecting portion of at least one peripheral device, and a connection between the peripheral device and the main device.

7. The method of claim 6, wherein the illustration includes an animation to show the connection between the main device and the peripheral device.

8. The method of claim 6, wherein the illustration shows the connection between the peripheral device and the main device in a highlighted form.

9. The method of claim 8, wherein the highlighted form is a color which differs from a remainder of the illustration.

10. The method of claim 8, wherein the connecting portion of the main device is a connecting portion on an outside surface of the main device.

11. The method of claim 6, wherein the displaying step displays the illustration on the display screen of the main device.

12. The method of claim 6, wherein the illustration shows a plurality of connecting portions of the main device.

13. The method of claim 6, wherein the illustration shows the connecting portion of a plurality of peripheral devices.

14. The method of claim 6, further comprising:
displaying a menu having a plurality of menu items, each menu item associated with at least one of a plurality of peripheral devices;
receiving user input on a selected menu item; and wherein
the displaying an illustration step displays an illustration associated with the selected menu item.

15. The method of claim 14, wherein the displaying a menu step displays each menu item as an icon, each icon representing one or combination of peripheral devices.

16. The method of claim 14, wherein the receiving step receives a signal from an input device indicating that a key of the input device associated with one of the menu items has been operated by the user.

17. The method of claim 14, wherein the receiving step receives signals from an input device providing instructions on moving a cursor displayed on the display screen onto one of the

menu items.

18. A method of assisting a user to make a connection between a main device and a peripheral device, comprising:

displaying an illustration on a display screen in response to user input, the illustration showing at least one connecting portion of a main device and a connection to the main device for a particular peripheral device.

19. The method of claim 18, wherein the illustration shows a plurality of connecting portions of the main device.

20. A method of assisting a user make a connection between a main device and a peripheral device, comprising:

displaying an illustration on a display screen in response to first user input, the illustration showing at least one connecting portion of the main device and the connecting portion of at least one peripheral device.

21. The method of claim 20, further comprising:

adding a connection illustration to the displayed illustration in response to second user input, the connection illustration showing a connection between the connecting portion of the peripheral device and the connecting portion of the main device.

22. The method of claim 20, further comprising:

displaying a second illustration on the display screen in response to second user input, the second illustration showing the connecting portion of the main device, the connecting portion of the peripheral device and a connection between the connecting portion of the peripheral device and the connecting portion of the main device.

23. The method of claim 20, wherein the displaying step displays each connecting portion of the main device.

24. The method of claim 20, wherein the displaying step displays each connecting portion of the main device and the connecting portion of more than one peripheral device.

25. A method of assisting a user to make a connection between a main device and a peripheral device, comprising:

displaying an illustration on a display screen in response to user input, the illustration visually demonstrating a connection to make between a connection portion of at least one peripheral device and at least one connecting portion of a main device.

26. A method of assisting a user to make a connection between a main device and a peripheral device, comprising:

displaying an illustration directing a user on a connection to make between a connecting portion of at least one peripheral device and at least one connecting portion of a main device on

a display screen in response to user input.

27. A method of assisting a user to make a connection between a main device and a peripheral device, comprising:

displaying an illustration guiding a user on a connection to make between a connecting portion of at least one peripheral device and at least one connecting portion of a main device on a display screen in response to user input.

28. An apparatus for assisting a user to make a connection between a main device and a peripheral device, comprising:

a display screen;

a display controller displaying a guide illustration on said display screen in response to user input, the guide illustration showing how to connect the main device and at least one peripheral device.

29. The apparatus of claim 28, wherein the main device is one of a television receiver and a personal computer.

30. The apparatus of claim 28, wherein the peripheral device is one of a video cassette recorder, a digital versatile disk drive, a broadcast antenna, a satellite receiver, a cable box, a disk drive, speakers, a mouse, and a printer.

31. The apparatus of claim 28, further comprising:

a memory storing a plurality of guide illustrations, each guide illustration corresponding to one or a combination of peripheral devices.

32. The apparatus of claim 28, wherein display controller is a display controller of the main device.

33. An apparatus for assisting a user to make a connection between a main device and a peripheral device, comprising:

a display screen;

a display controller displaying an illustration on said display screen in response to user input, the illustration showing at least one connecting portion of a main device, a connecting portion of at least one peripheral device, and a connection between the peripheral device and the main device.

34. The apparatus of claim 33, wherein the illustration includes an animation to show the connection between the main device and the peripheral device.

35. The apparatus of claim 33, wherein the illustration shows the connection between the peripheral device and the main device in a highlighted form.

36. The apparatus of claim 35, wherein the highlighted form is a color which differs from

• a remainder of the illustration.

37. The apparatus of claim 33, further comprising:

a memory storing a plurality of illustrations, each illustration corresponding to one or a combination of peripheral devices.

38. The apparatus of claim 33, wherein the illustration shows a plurality of connecting portions of the main device.

39. The apparatus of claim 33, wherein the illustration shows the connecting portion of a plurality of peripheral devices.

40. The apparatus of claim 33, further comprising:

an input processor receiving user input via one of a key input device connected to the input processor and a remote key input device, and processing the received user input; and wherein

the display controller displays a menu having a plurality of menu items, each menu item associated with at least one of a plurality of peripheral devices, and the display controller receives processed user input indicating a selection of a menu item and displays the illustration associated with the selected menu item.

41. The apparatus of claim 40, wherein the display controller displays each menu item

as an icon, each icon representing one or combination of peripheral devices.

42. The apparatus of claim 40, wherein the display controller receives a signal from the input processor indicating that a key of the key input device or the remote key input device associated with one of the menu items has been operated by the user.

43. The apparatus of claim 40, wherein the display controller receives signals from the input processor providing instructions on moving a cursor displayed on the display screen onto one of the menu items.

44. An apparatus for assisting a user to make a connection to a main device, comprising:
a display screen;

a display controller displaying an illustration on said display screen in response to user input, the illustration showing at least one connecting portion of the main device and a connection to the main device for a particular peripheral device.

45. An apparatus for assisting a user to make a connection between a main device and a peripheral device, comprising:

a display screen;

a display controller displaying a first illustration on said display screen in response to first user input, the illustration showing at least one connecting portion of the main device and the connecting portion of at least one peripheral device.

46. The apparatus of claim 45, wherein the display controller adds a connection illustration to the displayed illustration in response to second user input, the connection illustration showing a connection between the connecting portion of the peripheral device and the connecting portion of the main device.

47. The apparatus of claim 46, further comprising:

a memory storing the first illustration and a plurality of connection illustrations, each connection illustration associated with one or combination of peripheral devices.

48. The apparatus of claim 45, wherein the display controller displays a second illustration on the display screen in response to second user input, the second illustration showing the connecting portion of the main device, the connecting portion of the peripheral device and a connection between the connecting portion of the peripheral device and the connecting portion of the main device.

49. The apparatus of claim 48, further comprising:

a memory storing the first and second illustrations.

50. An apparatus for assisting a user to make a connection between a main device and a peripheral device, comprising:

a display screen;

a display controller displaying an illustration on said display screen in response to user

input, the illustration visually demonstrating a connection to make between a connection portion of at least one peripheral device and at least one connecting portion of a main device.

51. An apparatus for assisting a user to make a connection between a main device and a peripheral device, comprising:

a display screen;

a display controller displaying an illustration directing a user on a connection to make between a connecting portion of at least one peripheral device and at least one connecting portion of a main device on said display screen in response to user input.

52. An apparatus for assisting a user to make a connection between a main device and a peripheral device, comprising:

a display screen;

a display controller displaying an illustration guiding a user on a connection to make between a connecting portion of at least one peripheral device and at least one connecting portion of a main device on said display screen in response to user input.

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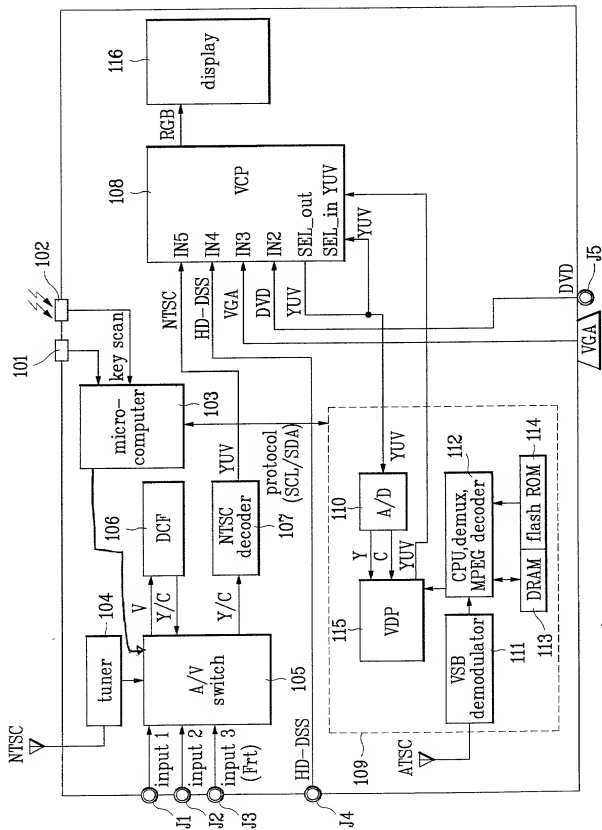
ABSTRACT

In the method and apparatus for assisting a user to make a connection between a main device and peripheral device, an illustration visually demonstrating how to connect a peripheral device or combination of peripheral devices to the main device is displayed on the display screen.

More specifically, in one embodiment, the illustration shows at least one connecting portion of the main device, the connecting portion of at least peripheral device, and the connection between the connecting portion of the main device and the connecting portion of the peripheral device.

In an alternative embodiment, more than one or all of the connecting portions of the main device are shown in the illustration. In addition to or instead of the alternative embodiment, the connecting portion of a plurality of a peripheral devices are shown in the illustration. In another embodiment of the present invention, the illustration shows at least one connecting portion of the main device, and the connections to make to the connecting portion of the main device when connecting a particular peripheral device.

FIG.1



2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811 2812 2813 2814 2815 2816 2817 2818

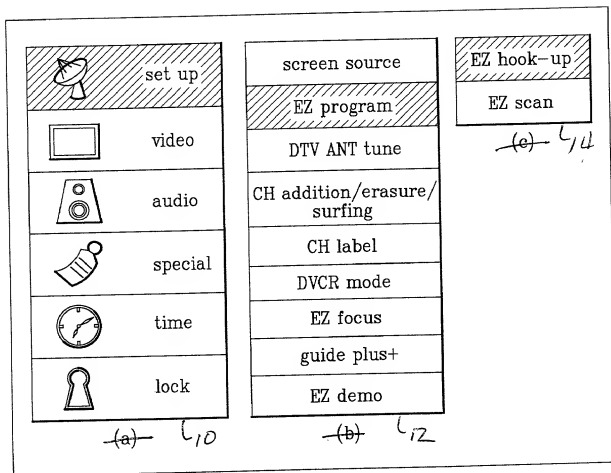


FIG. 3

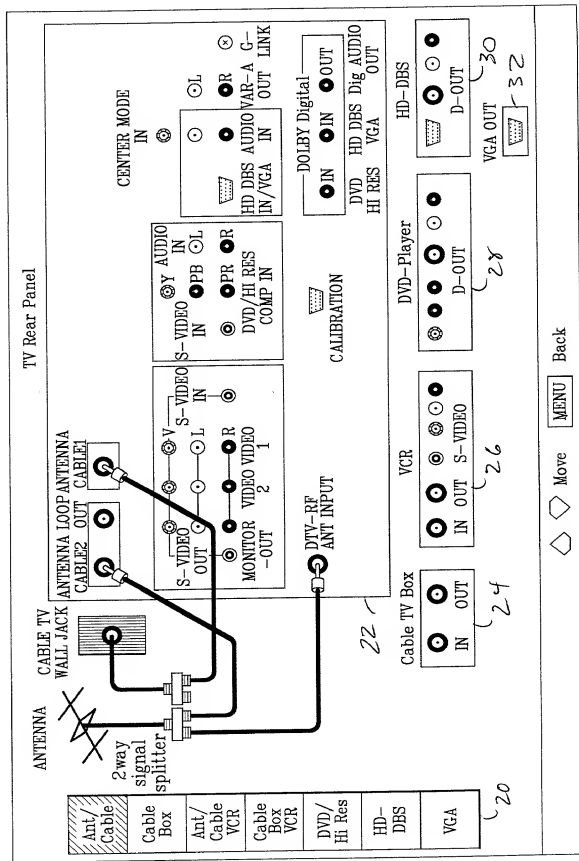


FIG. 4

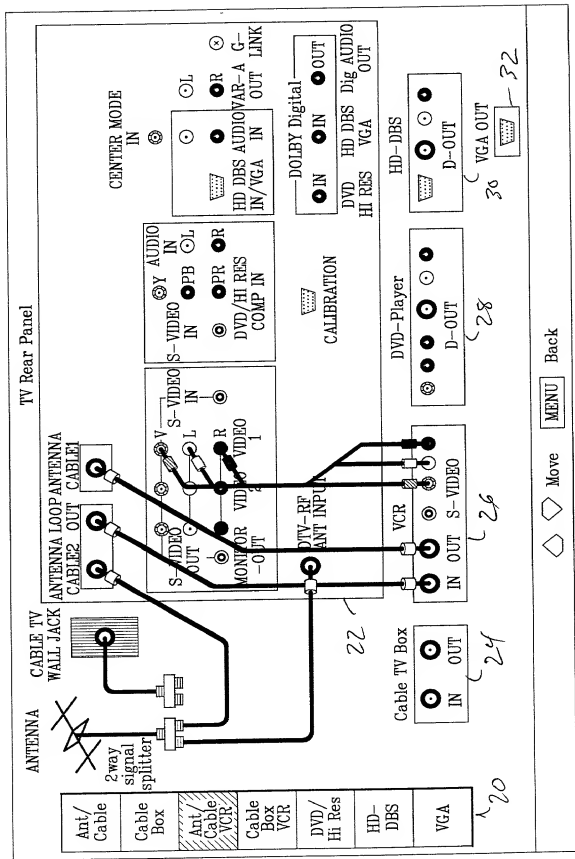


FIG.5

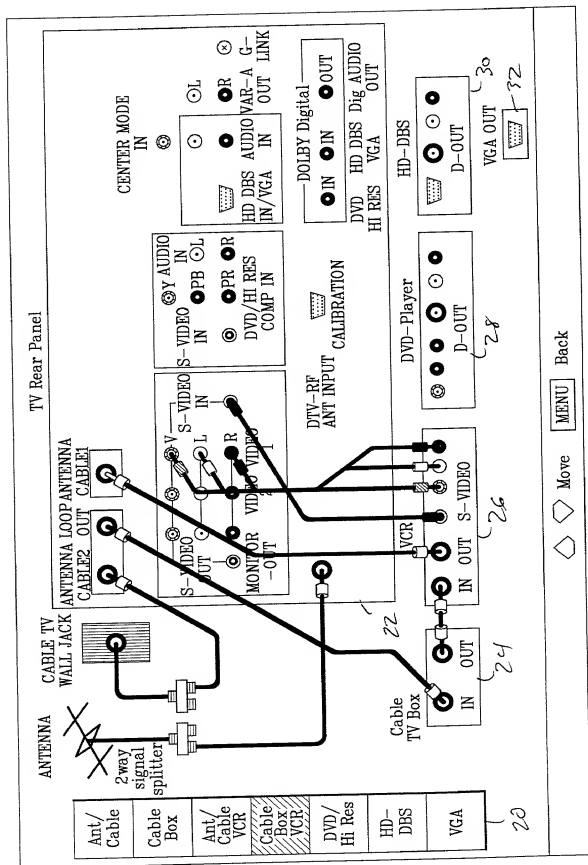


FIG. 6

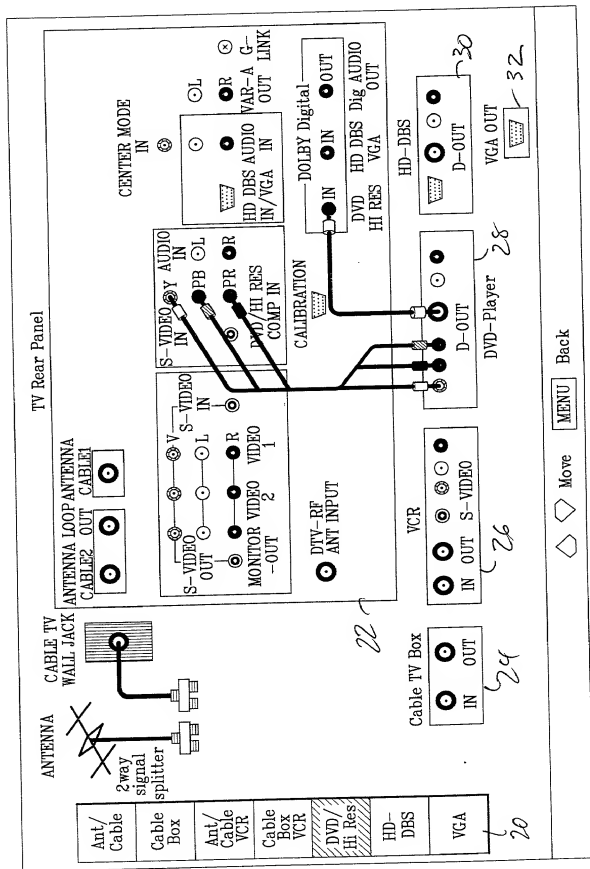


FIG. 7

